



5. (Original) The method of claim 1, wherein the nano-barcode is selected from the group consisting of carbon nanotubes, fullerenes, submicrometer metallic barcodes, nanoparticles and quantum dots.

6. (Original) The method of claim 3, wherein the nucleic acid is attached to a surface.

7. (Original) The method of claim 6, further comprising ligating adjacent coded probes that are hybridized to the nucleic acid.

8. (Original) The method of claim 7, further comprising separating ligated coded probes from the nucleic acid and non-ligated coded probes.

9. (Canceled)

10. (Original) The method of claim 1, wherein the coded probes are identified by scanning probe microscopy.

11. (Currently amended) The method of claim 1, wherein the coded probes are identified by an equipment selected from the group consisting of atomic force microscopy, scanning tunneling microscopy, lateral force microscopy, chemical force microscopy, force modulation imaging microscopy, magnetic force microscopy, high frequency magnetic force microscopy, magnetoresistive sensitivity mapping microscopy, electric force microscopy, scanning capacitance



19. (Previously Presented) A method comprising:

20. (Canceled)

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22. (Original) The method of claim 19, wherein the target molecule is a nucleic acid.

23. (Original) The method of claim 22, further comprising determining at least part of the sequence of the nucleic acid from the bound coded probes.

24. (Previously Presented) The method of claim 19, further comprising separating the bound coded probes from the target molecules after the coded probes are aligned on a surface.

25-28. (Canceled)

29. (Currently Amended) The method of claim 1, wherein the coded probes are further aligned on the substrate surface by free flow electrophoresis.

30. (Currently Amended) The method of claim 19, wherein the coded probes are further aligned on the substrate surface by free flow electrophoresis.

31. (Currently Amended) A method comprising:

- a) obtaining a plurality of coded probes, each coded probe comprising a probe molecule attached to at least one nano-barcode, and at least two of the coded probes comprise two or more identifiably different nano-barcodes that create different signatures;
- b) contacting one or more target molecules with the coded probes;

- c) aligning the coded probes that bind to the one or more target molecules on a surface by free flow electrophoresis;
- d) identifying the organized coded probes; and
- e) detecting the one or more target molecules based on the bound coded probes.

32. (Currently Amended) A method comprising:

- a) obtaining a plurality of coded probes, each coded probe comprising a probe molecule attached to at least one nano-barcode, and at least two of the coded probes comprise two or more identifiably different nano-barcodes that create different signatures;
- b) contacting one or more target molecules with the coded probes, and wherein one or more coded probes bind to the target molecules;
- c) aligning the coded probes that bind to the one or more target molecules on a surface by free flow electrophoresis;
- d) using scanning probe microscopy to identify the aligned coded probes; and
- e) detecting the one or more target molecules from the identified coded probes.